

ARIZONA DEPARTMENT OF HEALTH SERVICES
BUREAU OF EMERGENCY MEDICAL SERVICES AND TRAUMA SYSTEM



PERFORMANCE IMPROVEMENT TOOLKIT:
CARDIAC ARREST
AZ-PIERS Q3 2012 - Q2 2013

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Report No. 14-1-EMS

**Special thanks to the TEPI EMS workgroup: Paul Dabrowski, MD; Jill McAdoo, RN;
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Purpose:

The purpose of this report is to provide agencies with a baseline level of comparison on their performance during Q3 2012 to Q2 2013 on Cardiac Arrest calls. This report can be used to support Quality Assurance initiatives in their communities.

This report provides feedback on the following four Cardiac Arrest performance measures:

1. Improving the documentation of bystander CPR performance;
2. Reducing the length of time from arrival on scene to initiation of chest compressions;
3. Reduction the length of time from arrival on scene to defibrillation;
4. Transporting to a cardiac receiving center when appropriate.

Notes:

No/ND (Not Documented) are combined into one category as the absence of a procedure or prior aid could either mean the procedure was not performed, or was not documented in the record.

Agencies with a high number of null values on Cardiac Arrest (E11_01) are asked to work with your vendor and staff.

Limitations:

Additionally, state benchmarks are restricted to only include those agencies participating in the registry during the date range used in this report. Narratives are not reviewed as part of the report and any information documented in the Narrative that was not also documented in a necessary data element, would be counted as missing or not documented.

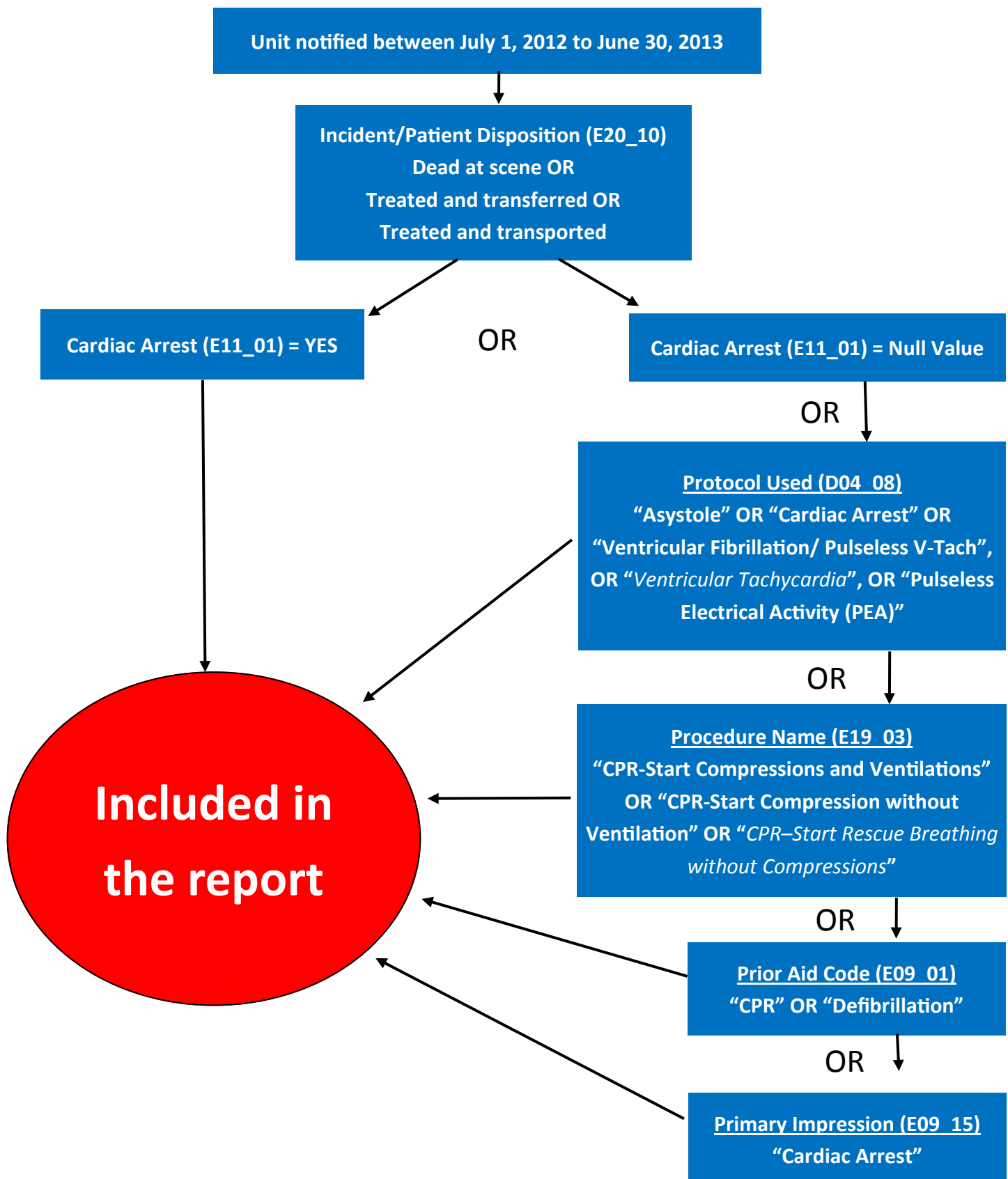
*Please note that Ventricular Tachycardia and CPR-Start Rescue Breathing without Compressions was inadvertently included. These two elements will not be included for next analysis.

If your agency is not currently participating but would like to sign up please visit us on our [AZ-PIERS homepage](#).

Methodology:

The [Arizona Prehospital Information & EMS Registry System \(AZ-PIERS\)](#) was analyzed to find records where a cardiac arrest was indicated.

The records of analysis had:



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There was a total of 1,155 patients matching the Cardiac Arrest criteria. The median age of Cardiac Arrest patients was 66 years.

Two thirds of patients were male and one third females. 40% of patients died on scene, 5% were treated and transferred for care, and 54% were treated and transported to a hospital.

Table 1: Demographics for Cardiac Arrest patients

Event characteristics	N	%
Cohort	1,155	100.00%
Gender		
*Missing	10	0.86%
Female	410	35.49%
Male	735	63.63%
Patient Discharge Status		
*Missing	4	0.34%
Dead at Scene	464	40.17%
Treated and transferred	64	5.54%
Treated and transported	623	53.93%

Table 2: Distribution of ages for Cardiac Arrest patients

	25%	Median	75%
Age (years)	53	66	78

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Table 3: Event documentation for Cardiac Arrest patients

Event documentation	N	%
Arrest witnessed		
*ND/No	779	67.44%
Yes	376	32.55%
Documentation of initial cardiac rhythm		
*ND/No	572	49.52%
Yes	583	50.47%
Documentation of ROSC		
*ND/No	462	40.00%
Yes	693	60.00%
Documentation of CPR date/time		
*ND/No	680	58.87%
Yes	475	41.12%
Documentation of termination of resuscitation time		
*ND/No	766	66.32%
Yes	389	33.67%

Of the 1,155 patients matching the Cardiac Arrest criteria, the arrest was witnessed in 67% of the cases.

Initial cardiac rhythms were documented in 50% of all cases, and ROSC was indicated in 60%.

The time CPR was initiated and terminated was documented 41% and just over 33%, respectively.

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**Performance Measure 1: Improve documentation
of bystander CPR**

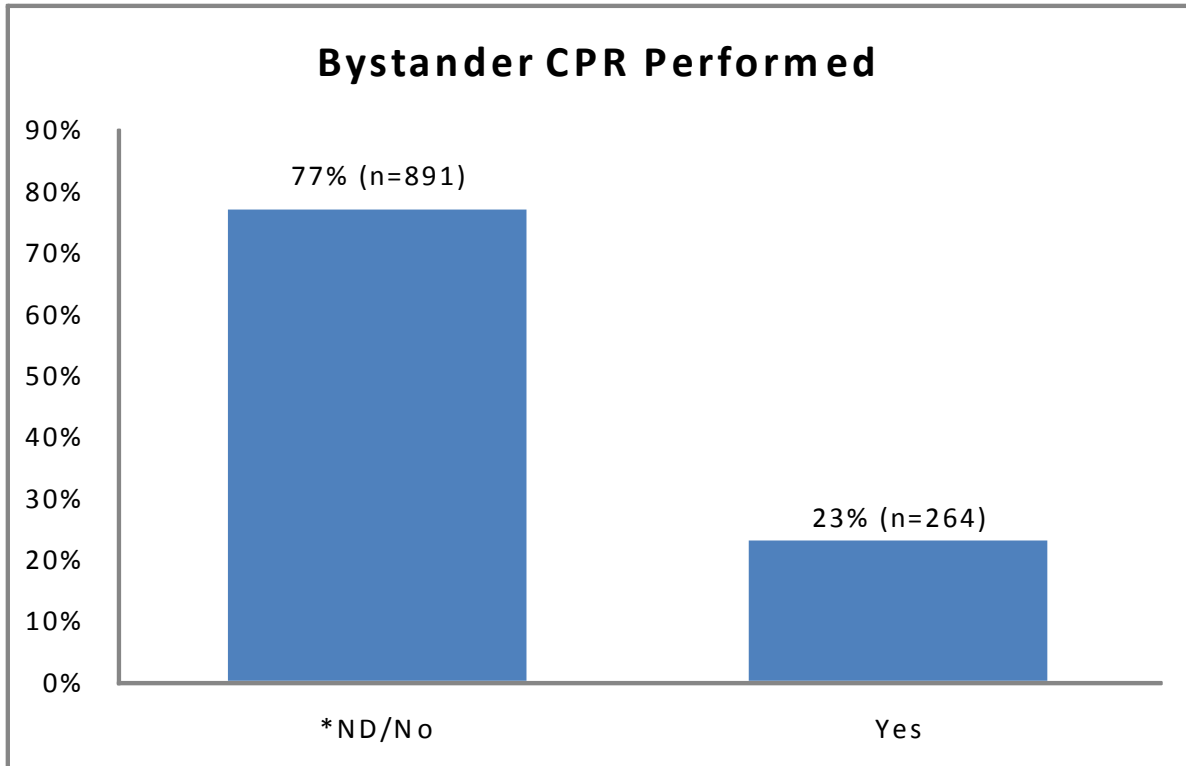


Table 3: Bystander CPR performed

1st performance measure: Bystander CPR performed	N	%
No/ND	891	77.14%
Yes	264	22.85%

More than 77% of patients had either no bystander CPR performed OR failed to document its occurrence. These elements were calculated from Prior Aid (E09_01) and Prior Aid Performed By (E09_02).

However, nearly 23% of records indicated that bystander CPR was performed on the patient.

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Performance Measure 2: Reduce the time to chest compression upon unit's arrival

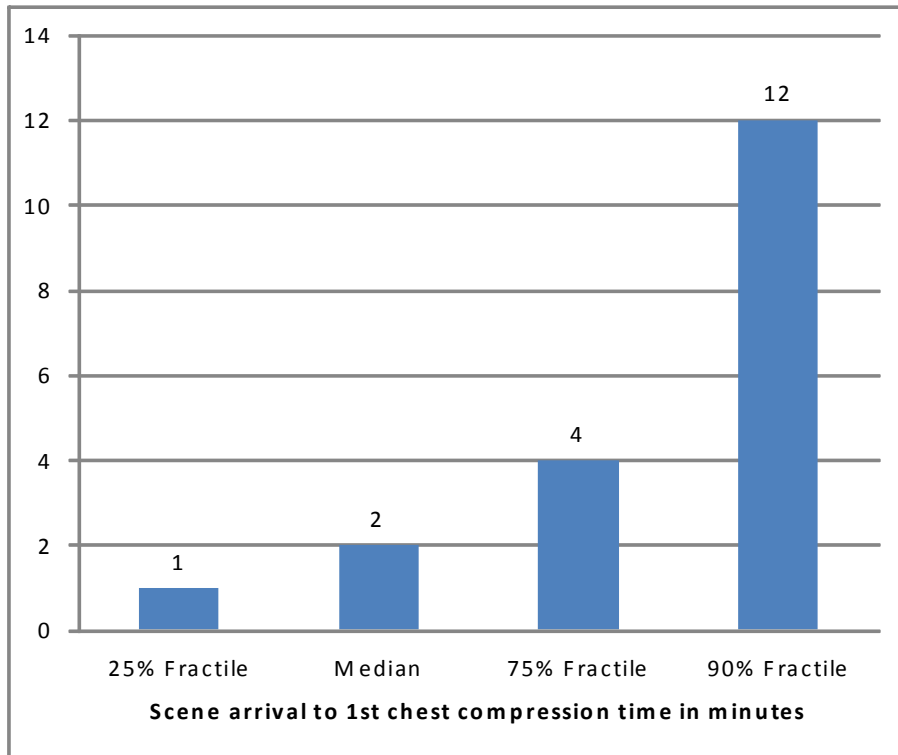


Table 4: Median Time from Arrival on Scene to 1st chest compression

2nd performance measure: Arrival on scene to first chest compression time (minutes)	Count	*ND	25%	Median	75%	Max
	396	759	1	2.0	4	22,560

The state median time for a unit to arrive on scene until the first chest compressions was 2 minutes.

In 90% of the cohort, the first chest compression was performed within 12 minutes after arriving on scene. In 759 records there was a missing time for either Unit Arrived on Scene (E05_06) OR Date/Time procedures (E19_01) performed successfully.

A unit arrived on scene time (E05_06) is defined as the time the vehicle stopped moving. The time of first chest compression was calculated by Procedures (D04_04) and Date/Time procedure performed successfully (E19_01).

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Performance Measure 3: Reduce the time to defibrillation upon unit's arrival

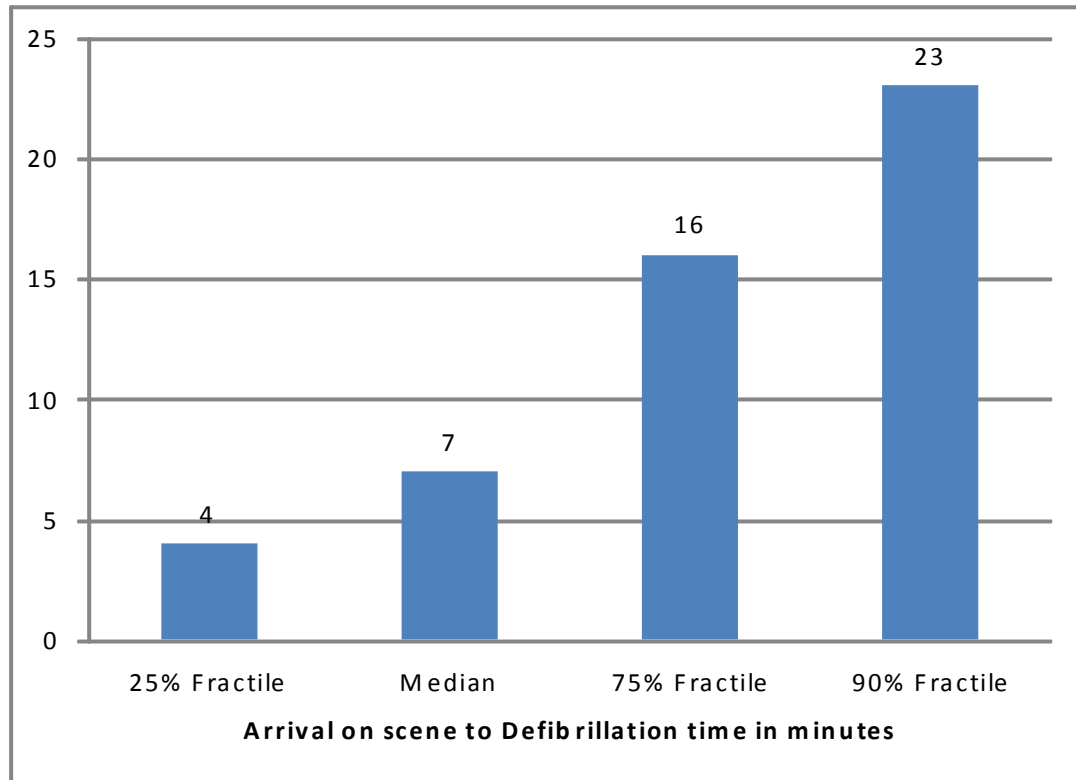


Table 5: Median Time from Arrival on Scene to Defibrillation time

3rd performance measure: Arrival on scene to defibrillation time (minutes)	Count	*ND	25%	Median	75%	Max
	136	1,019	4	7.0	16	2,896

The state median time for a defibrillation to a unit's arrival on scene was 7 minutes.

In 90% of the cohort, defibrillation was performed 23 minutes after a unit arrived on scene. In 1,019 records there was a missing time for either Unit Arrived on Scene (E05_06) OR Date/Time procedures (E19_01) performed successfully.

A unit arrived on scene time (E05_06) is defined as the time the vehicle stopped moving. The time of defibrillation was calculated by Procedures (D04_04) and Date/Time procedure performed successfully (E19_01).

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Performance Measure 4: Transport to a Cardiac Receiving Center

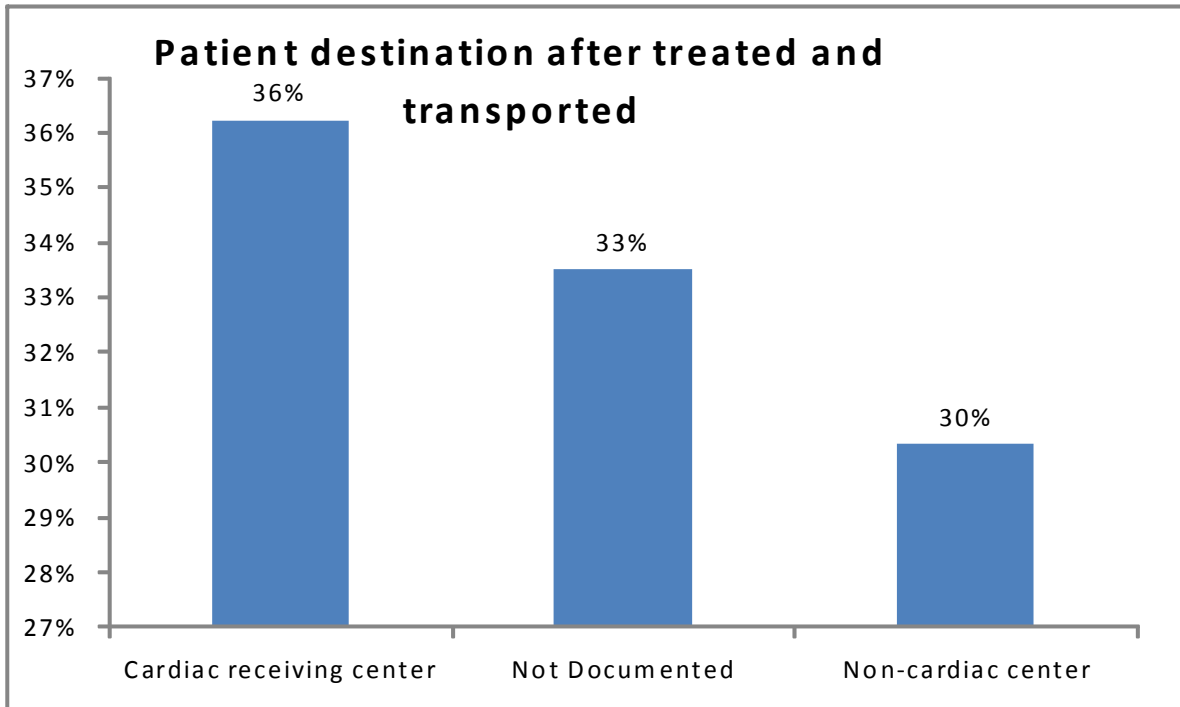


Table 5: Transported to a Cardiac Receiving Center

4th performance measure: Transported to a cardiac receiving center	N	%
Total treated and transferred	627	100.00%
Patient transported to location		
Cardiac receiving center	227	36.20%
Not Documented	210	33.49%
Non-cardiac center	190	30.30%

Patients that had 'Treated and Transported' were additionally broken down by the location to which the patient was transported.

Of these patients, 36% were transported to a [Cardiac Receiving Centers](#) (CRC). A large portion of records (33.5%) had no destination hospital information available.

There should be a focus from agencies to collect and report this element as this greatly impacts patient care and is the only way to efficiently link data for outcomes.